Biotechnology and Bioengineering

Volume 63, 1999

Volume 63, Number 1, April 5, 1999

1 Effects of Shear on Two Microalgae Species. Contribution of Pumps and Valves in Tangential Flow Filtration Systems
L. Vandanjon, N. Rossignol, P. Jaouen, J.M. Robert, and F. Quéméneur

10 Dynamic Reoptimization of a Fed-Batch Fermentor
M.S. Iyer, T.F Wiesner, and R.R. Rhinehart

22 Multi-Rate Nonlinear State and Parameter Estimation in a Bioreactor
S. Tatiraju, M. Soroush, and R. Mutharasan

33 Hydrolysis of Menhaden Oil by a *Candida cylindracea* Lipase Immobilized in a Hollow-Fiber Reactor
K.E. Rice, J. Watkins, and C.G. Hill, Jr.

46 Main and Interaction Effects of Acetic Acid, Furfural, and *p*-Hydroxybenzoic Acid on Growth and Ethanol Productivity of Yeasts
E. Palmqvist, H. Grage, N.Q. Meinander, and B. Hahn-Hägerdal

56 Trichloroethene Degradation in a Two-Step System by *Methylosinus trichosporium* OB3b. Optimization of System Performance: Use of Formate and Methane
E.M. Sipkema, W. de Koning, J.E.T. Van Hylckama Vlieg, K.J. Ganzeveld, D.B. Janssen, and A.A.C.M. Beenackers

69 The Effect of Redox Potential Changes on Reductive Dechlorination of Pentachlorophenol and the Degradation of Acetate by a Mixed, Methanogenic Culture
S.L. Stuart, S.L. Woods, T.L. Lemmon, and J.D. Ingle, Jr.

79 Use of *Thiobacillus ferrooxidans* in a Coupled Microbiological–Electrochemical System for Wastewater Detoxification
A. López-López, E. Expósito, J. Antón, F. Rodríguez-Valera, and A. Aldaz

87 Phosphate Release and Heavy Metal Accumulation by Biofilm-Immobilized and Chemically-Coupled Cells of a *Citrobacter* sp. Pre-Grown in Continuous Culture
J.A. Finlay, V.J.M. Allan, A. Conner, M.E. Callow, G. Basnakova, and L.E. Macaskie

98 An Analysis of a Trickle-Bed Bioreactor: Carbon Disulfide Removal
R. Lobo, S. Revah, and T. Viveros-García

COMMUNICATIONS TO THE EDITOR

110 Biosynthesis and Ultrasonic Degradation of Bacterial Poly(γ-Glutamic Acid)
G. Pérez-Camero, F. Congregado, J.J. Bou, and S. Muñoz-Guerra

116 Reusable Biosorbents in Capsules from *Zoogloea ramigera* Cells for Cadmium Removal
J.K. Park, Y.B. Jin, and H.N. Chang

122 On-Line Monitoring of the Progress of Infection in Sf-9 Insect Cell Cultures Using Relative Permittivity Measurements
A. Zeiser, C. Bédard, R. Voyer, B. Jardin, R. Tom, and A.A. Kamen

127 Forthcoming Articles

Volume 63, Number 2, April 20, 1999

129 Effects of Stratification in a Fluidized Bed Bioreactor During Treatment of Metalworking Wastewater
H.B. Schreyer and R.W. Coughlin

141 Wine Vinegar Production Using a Noncommercial 100-Litre Bubble Column Reactor Equipped with a Novel Type of Dynamic Sparger
G. Fregapane, H. Rubio-Fernández, J. Nieto, and M.D. Salvador

147 On-Line Study of Growth Kinetics of Single Hyphae of *Aspergillus oryzae* in a Flow-Through Cell
T. Christiansen, A.B. Spohr, and J. Nielsen

154 Enzymatic Grafting of a Natural Product onto Chitosan to Confer Water Solubility Under Basic Conditions
G. Kumar, P.J. Smith, and G.F. Payne

166 Protein Formulation and Lyophilization Cycle Design: Prevention of Damage Due to Freeze-Concentration Induced Phase Separation
M.C. Heller, J.F. Carpenter, and T.W. Randolph

175 Microbiological and Kinetic Aspects of a Biofilter for the Removal of Toluene from Waste Gases
M.E. Acuña, F. Pérez, R. Auria, and S. Revah

185 Computational and Experimental Investigation of Flow and Particle Settling in a Roller Bottle Bioreactor
F.J. Muzzio, D.R. Unger, M. Liu, J. Bramble, J. Searles, and P. Fahnestock

197 Gas Exchange is Essential for Bioreactor Cultivation of Tissue Engineered Cartilage
B. Obradovic, R.L. Carrier, G. Vunjak-Novakovic, and L.E. Freed

206 Hyaluronate-Alginate Gel as a Novel Biomaterial: Mechanical Properties and Formation Mechanism
S. Oerther, H. Le Gall, E. Payan, F. Lapicque, N. Presle, P. Hubert, J. Dexheimer, P. Netter, and F. Lapicque

216 Detoxification of Organophosphate Nerve Agents by Immobilized *Escherichia coli* with Surface-Expressed Organophosphorus Hydrolase
A. Mulchandani, I. Kaneva, and W. Chen

224 Production of *Glomus intraradices* Propagules, an Arbuscular Mycorrhizal Fungus, in an Airlift Bioreactor
M. Jolicoeur, R.D. Williams, C. Chavarie, J.A. Fortin, and J. Archambault

233 Optimizing the Salt-Induced Activation of Enzymes in Organic Solvents: Effects of Lyophilization Time and Water Content
M.T. Ru, J.S. Dordick, J.A. Reimer, and D.S. Clark

242 Structure of Lysozyme Dissolved in Neat Organic Solvents as Assessed by NMR and CD Spectroscopies
T. Knubovets, J.J. Osterhout, and A.M. Klibanov

COMMUNICATION TO THE EDITOR

249 Strain Improvement of *Aspergillus* Sp. and *Penicillium* Sp. by Induced Mutation for Biotransformation of α-Pinene to Verbenol
R. Agrawal, N.-U.-A. Deepika, and R. Joseph

253 Erratum

254 Forthcoming Articles

Volume 63, Number 3, May 5, 1999

255 Glycosylation of a Recombinant Protein in the Tn5B1-4 Insect Cell Line: Influence of Ammonia, Time of Harvest, Temperature, and Dissolved Oxygen
M. Donaldson, H.A. Wood, P.C. Kulakosky, and M.L. Shuler

263 Genetic Manipulation to Identify Limiting Steps and Develop Strategies for High-Level Expression of Penicillin Acylase in *Escherichia coli*
C.P. Chou, C.-C. Yu, J.-H. Tseng, M.-I. Lin, and H.-K. Lin

273 Generalized Linearization of Kinetics of Glucose Isomerization to Fructose by Immobilized Glucose Isomerase
E. Palazzi, and A. Converti

285 Use of an Ethanol Sensor for Feedback Control of Growth and Expression of TBV25H in *Saccharomyces cerevisiae*
S.B. Noronha, L.W. Wagner, N.H. Matheson, and J. Shiloach

290 Virus-Like Particle Analysis in Yeast Homogenate Using a Laser Light-Scattering Assay
S. Tsoka, I. Holwill, and M. Hoare

298 Effect of Ion Binding on Protein Transport through Ultrafiltration Membranes
M.K. Menon and A.L. Zydney

308 Kinetic Modeling of Oligosaccharide Synthesis Catalyzed by *Leuconostoc mesenteroides* NRRL B-1299 Dextransucrase
M. Dols, M. Remaud-Simeon, R.-M. Willemot, B. Demuth, H.-J. Jördening, K. Buchholz, and P. Monsan

316 Kinetics of Enzymatic Solid-to-Solid Peptide Synthesis: Intersubstrate Compound, Substrate Ratio, and Mixing Effects
M. Erbeldinger, X. Ni, and P.J. Halling

322 Molecular Modeling for the Design of a Biomimetic Chimeric Ligand. Application to the Purification of Bovine Heart L-Lactate Dehydrogenase
N.E. Labrou, E. Eliopoulos, and Y.D. Clonis

333 Enzymatic Synthesis of Arginine-Based Cationic Surfactants
P. Clapés, C. Morán, and M.R. Infante

344 Effect of Temperature on the Saccharide Composition Obtained after α-Amylolysis of Starch
L.M. Marchal, A.M.J. van de Laar, E. Goetheer, E.B. Schimmelpennink, J. Bergsma, H.H. Beeftink, and J. Tramper

356 Determination of the Phosphorylated Sugars of the Embden-Meyerhoff-Parnas Pathway in *Lactococcus lactis* Using a Fast Sampling Technique and Solid Phase Extraction
N.B.S. Jensen, K.V. Jokumsen, and J. Villadsen

363 A Comprehensive Model of Anaerobic Bioconversion of Complex Substrates to Biogas
I. Angelidaki, L. Ellegaard, and B.K. Ahring

373 An Expression System Matures: A Highly Efficient and Cost-Effective Process for Phytase Production by Recombinant Strains of *Hansenula polymorpha*
A.F. Mayer, K. Hellmuth, H. Schlieker, R. Lopez-Ulibarri, S. Oertel, U. Dahlems, A.W.M. Strasser, and A.P.G.M. van Loon

382 Forthcoming Articles

Volume 63, Number 4, May 20, 1999

383 Solid-State Fermentation in Rotating Drum Bioreactors: Operating Variables Affect Performance through Their Effects on Transport Phenomena
D.M. Stuart, D.A. Mitchell, M.R. Johns, and J.D. Litster

392 Expression of Soluble and Catalytically Active Plant (Monocot) β-Glucosidases in *E. coli*
M. Cicek and A. Esen

401 Kinetic Model of Biosurfactant-Enhanced Hexadecane Biodegradation by *Pseudomonas aeruginosa*
A.M. Sekelsky and G.S. Shreve

410 Oxygen, pH Value, and Carbon Source Induced Changes of the Mode of Oscillation in Synchronous Continuous Culture of *Saccharomyces cerevisiae*
M. Beuse, A. Kopmann, H. Diekmann, and M. Thoma

418 Biomass Accumulation and Clogging in Biotrickling Filters for Waste Gas Treatment. Evaluation of a Dynamic Model Using Dichloromethane as a Model Pollutant
W.J.H. Okkerse, S.P.P. Ottengraf, B. Osinga-Kuipers, and M. Okkerse

431 Membrane Process for Biological Treatment of Contaminated Gas Streams
S.J. Ergas, L. Shumway, M.W. Fitch, and J.J. Neemann

442 Effects of Dissolved Oxygen on the Morphology of an Arachidonic Acid Production by *Mortierella alpina* 1S-4
K. Higashiyama, K. Murakami, H. Tsujimura, N. Matsumoto, and S. Fujikawa

449 Wheat Prolamine Crosslinking Through Dityrosine Formation Catalyzed by Peroxidases: Improvement in the Modification of a Poorly Accessible Substrate by "Indirect" Catalysis
T. Michon, W. Wang, E. Ferrasson, and J. Guéguen

459 Crosslinking of Glucoamylases via Carbohydrates Hardly Affects Catalysis but Impairs Stability
Z. Sasvári and B. Asbóth

464 Relationship Between Recombinant Activated Protein C Secretion Rates and mRNA Levels in Baby Hamster Kidney Cells
C.H. Fann, M.M. Guarna, D.G. Kilburn, and J.M. Piret

473 Inoculation and Growth Conditions for High-Cell-Density Expansion of Mammalian Neural Stem Cells in Suspension Bioreactors
M.S. Kallos and L.A. Behie

484 Predictive Control of Hollow-Fiber Bioreactors for the Production of Monoclonal Antibodies
J.E. Dowd, I. Weber, B. Rodriguez, J.M. Piret, and K.E. Kwok

493 Concentration-Dependent Internalization of a Cytokine/Cytokine Receptor Complex in Human Hematopoietic Cells
P.W. Zandstra, E. Jervis, C.A. Haynes, D.G. Kilburn, C.J. Eaves, and J.M. Piret

COMMUNICATION TO THE EDITOR

502 Influence of Water Activity on the Enantioselective Esterification of (*R,S*)-Ibuprofen by *Candida antarctica* Lipase B in Solventless Media
P. Pepin and R. Lortie

506 Forthcoming Articles

Volume 63, Number 5, June 5, 1999

507 Anaerobic Phosphate Release from Activated Sludge with Enhanced Biological Phosphorus Removal. A Possible Mechanism of Intracellular pH Control
P.L. Bond, J. Keller, and L.L. Blackall

516 Dose-Dependent Reduction of Apoptosis in Nutrient-Limited Cultures of NS/0 Myeloma Cells Transfected with the E1B-19K Adenoviral Gene
S. Mercille, P. Jolicoeur, C. Gervais, D. Paquette, D.D. Mosser, and B. Massie

529 Apoptosis-Resistant E1B-19K-Expressing NS/0 Myeloma Cells Exhibit Increased Viability and Chimeric Antibody Productivity under Perfusion Culture Conditions
S. Mercille and B. Massie

544 Tuning Biphenyl Dioxygenase for Extended Substrate Specificity
F. Brühlmann and W. Chen

552 Hydrostatic Pressure Rescues Native Protein from Aggregates
D. Foguel, C.R. Robinson, P.C. de Sousa, Jr., J.L. Silva, and A.S. Robinson

559 Constraints on the Transport and Glycosylation of Recombinant IFN-γ in Chinese Hamster Ovary and Insect Cells
A.D. Hooker, N.H. Green, A.J. Baines, A.T. Bull, N. Jenkins, P.G. Strange, and D.C. James

573 Influence of Low Temperature on Productivity, Proteome and Protein Phosphorylation of CHO Cells
H. Kaufmann, X. Mazur, M. Fussenegger, and J.E. Bailey

583 Integrated Reversed Micellar Extraction and Stripping of α-Amylase
Z. Lazarova and K. Tonova

593 Studies on the Respiration Rate of Free and Immobilized Cells of *Cephalosporium acremonium* in Cephalosporin C Production
M.L.G.C. Araujo, R.C. Giordano, and C.O. Hokka

601 Epoxidation of 1,7-Octadiene by *Pseudomonas oleovorans* in a Membrane Bioreactor
S.D. Doig, A.T. Boam, A.G. Livingston, and D.C. Stuckey

612 Recombinant Protein Synthesis in *Trichoplusia ni* BTI-Tn-5B1-4 Insect Cell Aggregates
M.A. Saarinen, K.A. Troutner, S.G. Gladden, C.M. Mitchell-Logean, and D.W. Murhammer

618 Regional Heparinization Via Simultaneous Separation and Reaction in a Novel Taylor-Couette Flow Device
G.A. Ameer, S. Raghavan, R. Sasisekharan, W. Harmon, C.L. Cooney, and R. Langer

COMMUNICATION TO THE EDITOR

625 Diffusion in Cell-Free and Cell Immobilising κ-Carrageenan Gel Beads with and without Chemical Reaction
D.M.R. Mateus, S.S. Alves, and M.M.R. da Fonseca

632 Forthcoming Articles

Volume 63, Number 6, June 20, 1999

633 Affinity Chromatographic Screening of Soluble Combinatorial Peptide Libraries
P.Y. Huang and R.G. Carbonell

642 Kinetic Analysis of Simultaneous 2,4-Dinitrotoluene (DNT) and 2,6-DNT Biodegradation in an Aerobic Fluidized-Bed Biofilm Reactor
B.F. Smets, R.G. Fiefler, U. Lendenmann, and J.C. Spain

654 Kinetics of Retrovirus Production and Decay
J.M. Le Doux, H.E. Davis, J.R. Morgan, and M.L. Yarmush

663 Controlled Shear Filtration: A Novel Technique for Animal Cell Separation
J.H. Vogel and K.-H. Kroner

675 Metabolic Flux Analysis of Hybridoma Continuous Culture Steady State Multiplicity
B.D. Follstad, R.R. Balcarcel, G. Stephanopoulos, and D.I.C. Wang

684 Near-Infrared Spectroscopy for Bioprocess Monitoring and Control
K.S.Y. Yeung, M. Hoare, N.F. Thornhill, T. Williams, and J.D. Vaghjiani

694 Kinetics and Performance of a Co-Immobilised System of Amyloglucosidase and *Zymomonas mobilis*
L. Hellendoorn, S.P.P. Ottengraf, J.C. van den Heuvel, J.A.M.M. Pennings, V.A.P.M. dos Santos, and R.H. Wijffels

705 Use of Multi-Staining Flow Cytometry to Characterise the Physiological State of *Escherichia coli* W3110 in High Cell Density Fed-Batch Cultures
C.J. Hewitt, G. Nebe-Von Caron, A.W. Nienow, and C.M. McFarlane

712 Effects of Pulse Addition of Carbon Sources On Continuous Cultivation of *Escherichia coli* Containing a Recombinant *E. coli gapA* Gene
A. Gschaedler, N. Robas, J. Boudrant, and C. Branlant

COMMUNICATION TO THE EDITOR

721 Chimeric Infectious Bursal Disease Virus-Like Particles Expressed in Insect Cells and Purified by Immobilized Metal Affinity Chromatography
Y.-C. Hu, W.E. Bently, G.H. Edwards, and V.N. Vakharia

730 Enzymatic Synthesis of Unsaturated Fatty Acid Glucoside Esters for Dermo-Cosmetic Applications
M.-P. Bousquet, R.-M. Willemot, P. Monsan, and E. Boures

737 Metabolic Flux Analysis of *Escherichia coli* Expressing the *Bacillus subtilis* Acetolactate Synthase in Batch and Continuous Cultures
A.A. Aristidou, K.-Y. San, and G.N. Bennett

750 Cloning and Characterization of the Astaxanthin Biosynthetic Gene Encoding Phytoene Desaturase of *Xanthophyllomyces dendrorhous*
J.C. Verdoes, N. Misawa, A.J.J. van Ooyen

756 Erratum

757 Forthcoming Articles

758 Indexes to Volume 63